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ABSTRACT

A mnemonic device is any technique or system to improve or aid the memory by use of formulas. Memory aids enjoyed great popularity in ancient times, but with the advent of literacy, the need for memorization was lessened and mnemonics were not taught regularly. However, recent research in cognitive psychology suggests that mnemonics, taught and used systematically, hold great potential for classroom use. Beginning language students must store large quantities of vocabulary early in their instruction, while developing language skill areas. Teachers can encourage students to use imagery to retain vocabulary by imagining themselves in a situation in which the vocabulary items would be present, as in a restaurant while studying a unit on food. Research indicates that younger students remember best when teachers provide the images, while adults benefit most from using their own, personally meaningful images. Several specific types of mnemonic devices have been found to work well, including keyword mnemonics that couple the acoustic with the visual word form, and pegword mnemonics that require learning a standard list of pegwords and making several kinds of associations with them. Use of such techniques has been found to increase learning, but students must be made aware of the techniques and be given specific strategies for their use. (MSE)

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Memory Hooks and Other Mnemonic Devices: A Brief Overview for Language Teachers

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Spring ahead, fall back; thirty days hath September, April, June and November; Columbus sailed the ocean blue in fourteen hundred ninety-two. All these mnemonics share a common goal: they help us remember or retrieve information which we normally don't trust ourselves to recall without something to hook into mentally.

What Are Mnemonics?

A mnemonic device is any technique or system to improve or aid the memory by use of formulas. Popularly, mnemonics are referred to as memory hooks, memory tricks, or memory crutches. From such labels, one has the idea that mnemonic devices are merely gimmicks—not viewed as legitimate techniques to improve memory. This is far from the truth.

Memory aids enjoyed great popularity in ancient times. When Cicero wrote *De oratore* more than 2,500 years ago, he advocated the use of the art of memory for students of rhetoric who, when giving long speeches, could not refer to notes. Instead, these students were to imagine a large, familiar building with many rooms. They were to mentally walk through these rooms as they delivered their speech and in certain locations "see" an object which was to remind them of their next idea or point as they spoke. This mnemonic of *loci* (places) was often coupled with *imagines*

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or images. Students were instructed how to transform their words and ideas into mental images of famous or strange people in dramatic or unusual situations. This vivid picture or series of images would, in turn, act as a memory cue for the information orators, actors or politicians intended to present.[1]

With the advent of literacy, the need for memorization was no longer a required skill and mnemonics were not taught regularly. In more recent history, cognitive psychologists have been increasingly concerned with the question of how human memory functions. Numerous studies have been done in which subjects learn long lists of words, pairs of words, and nonsense syllables. Observers note how well [illegible] of words remembered, how associations between a given word [illegible] made, and how well seemingly unrelated meaningless material can be retained in sequence. Since the mid-1970s a great deal of evidence has been compiled on human memory through such experiments.[2] In many studies subjects are first instructed in the use of a specific mnemonic technique. These subjects are then compared with others told to use strict rote memorization. Subjects using mnemonics have been found to have significantly higher retention scores than those control subjects using no such strategy. A substantial portion of this research has been specifically conducted on the learning of foreign language vocabulary rather than nonsense syllables. These findings should be regarded with caution since studies of vocabulary retention by nonnative speakers have been for the most part conducted in laboratory settings, not in classrooms[3] and have used mostly concrete nouns. Researchers do comment that evidence which shows such large gains in vocabulary memorization may hold great potential for classroom use, if techniques are taught and used systematically.

Why Do We Need Mnemonics?

When students are asked what one factor hinders them most in understanding and speaking a foreign language, the majority respond: lack of vocabulary and/or not remembering individual words.[4] In reading comprehension as well as in native speakers' ratings of nonnative speakers' communicative ability, lack of adequate vocabulary is blamed for low comprehension of the message.[5] While syntax and grammatical accuracy

help convey the message, there is no message without the words. The implication for beginning language students in particular is that they must store much more vocabulary in their long-term memory within a short amount of time, while continuing to develop the five skill areas. Clearly the memory load on our students is taxing. This is evidenced on comprehensive final examinations, where recall of early material drops sharply often despite spiraled presentation.

Cognitive psychology points out that rote repetition of target language words and their meanings via flash cards and word lists has limited success for vocabulary memorization without some further enhancement. In the classroom, we often use pictures to make vocabulary more memorable and add to the association between the written word and its pronunciation. While pictures have been found to serve the function of activating the memory, thereby enhancing the likelihood of recall, they are not mnemonic in function. Rather, pictures encourage production skills by helping us say something *about* the object we see.[6] Researchers in the area of human memory have concluded that in various recall tasks, such as learning foreign language vocabulary, the use of imagery is the most potent meaningful device in recalling nouns as well as adjectives. "It is apparent that the process underlying word imagery plays a central role in learning and language functions."[7] Aristotle had already noted in *Topica* that the memory of things themselves is often called to mind by the mere mention of their places.[8] We often associate an idea or object with a certain place. This could be the place we most often see the object (the kitchen is the place we see the stove) or it could be a place we frequently associate with an action (the intersection of a certain street may be associated with the idea of stopping). When learning a unit on food, it is helpful to have students think of themselves in a familiar restaurant or grocery store or form a mental image of a restaurant or store in the target culture. Each vocabulary item or function, such as buying or ordering food, should automatically be thought of in the imaginary context. As in schema theory, this mnemonic of associating an idea, object, or action with a certain place, location, or context helps recall by supplying a familiar mediating image. The image of a restaurant calls to mind much of the specific vocabulary associated with it.

Who Uses Mnemonics?

We all use imagery to some degree in our everyday lives. When trying to remember something we read, we often close our eyes and "see" the places on the page of a newspaper or book where we have read the information. This image helps us recall the facts. In teaching foreign languages we must capitalize on our students' ability to use imagery to expedite learning. Researchers have found that children beyond the sixth grade profit from instruction on how to use imagery, especially when they haven't spontaneously discovered this memory aid themselves. Younger children, up to junior high school, perform better when the teacher supplies the mediating image. Older children and adults, however, are more likely to do better when they generate their own personally meaningful images.[9]

Literature on the learning styles of students also shows that most learners tend to classify themselves as visual learners. Interestingly, these visually oriented students, upon being asked by researchers, report they already use imagery or other symbolic mnemonics to aid in learning. Yet these students are not always systematic in using learning aids. In studies of good language learners, it has been found that there is great individual variation and that students use a variety of devices, depending on the task to be mastered.[10] On the other hand, poorer students and those with lower verbal SAT scores who seldom used memory aids were able to increase their scores dramatically after instruction in the use of mnemonics. This finding basically supports the intuitive notion that lower ability learners need instruction on how to study.

What Mnemonics Work Best?

Since we tend to memorize words by pronunciation (i.e., frequent repetition; audible or inaudible) and mental imagery is such a strong mediator in memorization tasks, it is only logical to couple the acoustic with the visual to form what is called the *keyword mnemonic*. The keyword technique was developed by Atkinson[11] and furthered by Raugh[12] in the mid-1970s to test vocabulary retention by subjects learning Spanish and Russian vocabulary. The keyword mnemonic is based on

the observation that cognates or other orthographically similar words from one's native language can act as verbal mediators between the written representation of a word and its target language pronunciation. For example, students of German can use *flesh* in English to mediate between the German word *Fletisch* and its specific English translation *meat*. Or when studying French *arbre*, our students could use the English *arbor* as the mediator (i.e., keyword) for *tree*.

Added to the acoustic link in the keyword technique is an image link to further strengthen the memory. The image tends to be a novel one, making it more memorable. Thus, given the word *père* in French, students can imagine *father* eating a pear, or *father* having a pear-shaped body. An important element is to establish a meaningful interaction between the target language word and the acoustically similar keyword. Thus, for German *Gabel*, one can picture a house with several gables (keyword) and then imagine *forks* stabbed into its gables; or for *Hose*, someone wearing a pair of *pants* made of green garden hose.

In foreign language teaching the keyword mnemonic is the most frequently tested of all known memory aids. The majority of the experimental results have indeed found that the keyword mnemonic significantly increases retention of vocabulary.

The only other empirically tested imagery-based mnemonic is the *peguord technique*. Although results have substantiated its superiority to whatever mode of free learning the control groups have chosen to employ, the use of the pegword or hook mnemonic is not as intuitively appealing and tends to involve much valuable time to teach. Briefly, to use the pegword or hook mnemonic, two steps are again involved. First students overlearn a standard list of pegwords (*one* is for *bun*, *two* is for *shoe*...*ten* is for *hen*). More recently this method has been adapted into a hook technique where concrete pegwords in the target language are chosen for their consonant-number similarity. For example, 1-t (one downstroke), 2-n (two-pronged downstroke). Thus, in French, pegwords with salient consonants are 1-*thé*, 2-*noeud* or "tea," "knot." The second stage consists of associating the target language vocabulary word to the picture of the pegword. To memorize *mère* first, *père* second, a student of French may visualize mother drinking tea, "father" tying a knot, and find this sequential approach to memorization useful. This method has also been tested on students learning French nouns with genders [13] Subjects were to imagine

a man or woman in each picture. It was found that although not all nouns were recalled, all genders were correct.

Both the keyword and the pegword or hook mnemonics can be modified from an imagery- to a verbal-based strategy. Thus, rather than imagine a picture with an interaction between two objects in the keyword method, i.e., father (*père*) eating a pear, students can be encouraged to make up a sentence about the target word: "The grandmother (*grand-mère*) is sitting on the gray mare."

Sound symbolism can also be used as a mnemonic—either alone or in combination with imagery. Spanish *caballo* may be memorized using "baa" as an acoustic hint. More abstractly, the German preposition *gegen* (against) could be retained through "bang-g-g!" This mnemonic, incidentally, has been successfully employed in teaching spelling in the native language.[14] To remember the orthography of "cemetery," it is associated with the exclamation "E-E-E!" Similarly, visual poetry is used when the shape of a word reinforces its meaning. In English, one can imagine eyelashes drawn on either side of the "oo" of "look." Grouping letters into shapes in charts, such as the shoe-shaped diagram, is often used to illustrate stem-changing verbs in French or Spanish[15] or to present case endings for adjectives in German. While sound symbolism, visual poetry and diagramming have not been empirically tested, they are cited in popular memory books[16] and reported by students as being effective memory hooks.

Only a few articles on mnemonic aids have been written for language teachers describing pragmatic or intuitively appealing mnemonics for classroom use.[17] Those using the keyword mnemonic admit it is difficult to find words in English which sound like the target language word and can be coupled with a good image. Yet practitioners recommend the following strategies:

1. visualization of a scene, a person, or an action;
2. concretization of information, concepts, or ideas;
3. linking an acoustically similar English word with the target foreign language word.

They agree that these techniques significantly enhance memorability and facilitate learning—especially with students who have not developed such strategies on their own.

Cognitive psychologists are quite adamant on their position that the

use of strategies can and does increase learning."[1] The evidence is that many students do not use the strategies available to them due to a lack of awareness that they exist, lack of motivation to try something new, or lack of belief in the mediating capabilities of memorization techniques. When researchers have used introspection with students to ascertain their learning strategies, they have found that many are inefficient users of verbal or pictorial mediators.[2] Use of conscious learning strategies by our students hinges on their awareness of the options for increasing their memory capacity. We can promote this awareness by giving explicit instructions in the use of various mnemonic strategies designed to maximize learning.

The new proficiency guidelines are detailing *what* to learn, not *how* to learn. Expecting students to perform well without giving them the tools they need is ludicrous. If we want our students to achieve quality in their studies, we must show them how to arrive efficiently at this goal. Instruction in mnemonics is but one creative way to help our students develop their linguistic and cognitive capacities with tools they already possess. Besides appealing to various modalities and learning styles, use of mnemonics helps gain access to students' creative, imaginative side and facilitates further interest and achievements in language learning.

Notes

1. For a detailed description of the development of mnemonics from Greek and Roman times through the Middle Ages, see Frances A. Yates, *The Art of Memory* (Chicago: University of Chicago Press, 1966).
2. Two excellent reviews of the mnemonics and memory research are Kenneth L. Higbee, "Recent Research on Visual Mnemonics: Historical Roots and Educational Fruits," *Review of Educational Research* 49 (1979), pp. 611–629, and Allan Paivio and Alain Desrochers, "Mnemonic Techniques in Second-Language Learning," *Journal of Educational Psychology* 73 (1981), pp. 780–795.
3. The results of a study conducted in an actual foreign language classroom setting is reported by Benoit Willerman and Bernice Melvin, "Reservations About the Keyword Mnemonic," *The Canadian Modern Language Review* 35 (1979), pp. 443–453.
4. Jeannette Ludwig, "Vocabulary Acquisition as a Function of Word Characteristics," *The Canadian Modern Language Review* 40 (1984), pp. 552–556.
5. One such recent study is Kathleen Y. Enaz, "French Attitudes Toward Typical Speech Errors of American Speakers of French," *The Modern Language Journal* 66 (1982), pp. 133–139.
6. An intriguing distinction is drawn between *picture* and *image* in Francis S. Bellezza, "Mnemonic-Device Instruction with Adults," in Michael Pressley and Joel R. Levin, eds., *Cognitive Strategy Research: Psychological Foundations* (New York: Springer-Verlag, 1983), pp. 64–65. Also see Allan Paivio, "Strategies in Language Learning," in Michael Pressley and Joel R. Levin, eds., *Cognitive Strategy Research: Educational Applications* (New York: Springer-Verlag, 1983), pp. 185–187.
7. John C. Yuille, Allan Paivio, and Wallace E. Lambert, "Noun and Adjective Imagery and Order in Paired-Associate Learning by French and English Subjects," *Canadian Journal of Psychology* 23 (1969), pp. 459–466.

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8 Yates.
9 Parvis and Desrochers, p. 790.
10 Parvis and Desrochers, p. 791. Also, H. H. Stern, "What Can We Learn from the Good Language Learner?" *Canadian Modern Language Review* 31 (1975), pp. 304–318.
11 Richard C. Atkinson, "Mnemotechnics in Second-Language Learning," *American Psychologist* 30 (1975), pp. 821–828.
12 _____ and Michael B. Raugh, "An Application of the Mnemonic Keyword Method to the Acquisition of a Russian Vocabulary," *Journal of Experimental Psychology: Human Learning and Memory* 1 (1975), pp. 126–133.
13 Alain Desrochers, *Effects of an Imagery Mnemonic on the Acquisition and Retention of French Article-Noun Pairs*, unpublished doctoral dissertation, University of Western Ontario, 1980.
14 G. A. Negin, "Mnemonics and Demonic Words," *Reading Improvement* 15 (1978), pp. 180–182.
15 A variety of mnemonic techniques for teaching Spanish are described in Harry G. Tuttle, "Mnemonics in Spanish Classes," *Hispania* 64 (1981), pp. 582–584.
16 For example, Harry Lorayne and Jerry Lucas, *The Memory Book* (New York: Ballantine, 1974).
17 Among others: Constance K. Knop, "Mnemonic Devices in Teaching French," *French Review* 45 (1971), pp. 337–342; Betty Lou Leaver, "Twenty Minutes to Mastery of the Cyrillic Alphabet," *Foreign Language Annals* 17 (1984), pp. 215–220; Jeannette Ludwig, "Vocabulary Acquisition as a Function of Word Characteristics," *The Canadian Modern Language Review* 40 (1984), pp. 552–562; C. E. Ott, D. C. Butler, et al., "The Effect of Interactive-Image Elaboration on the Acquisition of Foreign Language Vocabulary," *Language Learning* 23 (1973), pp. 197–203.
18 Michael Pressley, "Making Meaningful Materials Easier to Learn: Lessons from Cognitive Strategy Research," in Michael Pressley and Joel R. Levin, eds., *Cognitive Strategy Research: Educational Applications* (New York: Springer-Verlag, 1983), pp. 239–266.
19 Carol Hosenfeld, "Learning About Learning: Discovering Our Students' Strategies," *Foreign Language Annals* 9 (1979), pp. 117–129.

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